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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,221

06/20/2007

Noboru Abe

46453

1699

20736 7590 11/07/2008  
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EXAMINER

VALENROD, YEVGENY

ART UNIT

PAPER NUMBER

1621

MAIL DATE

DELIVERY MODE

11/07/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,221	<b>Applicant(s)</b> ABE ET AL.	
	<b>Examiner</b> YEVEGENY VALENROD	<b>Art Unit</b> 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

The following is a second office action in application # 10/584,221. Amendment to claims submitted 6/26/08 is acknowledged. Applicants' remarks and the accompanying declaration of Hiroki Kodama (the Kodama declaration) have been fully considered by the Examiner.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodama et al. (EP 1,277,726 A1) in view of Harayama et al. (WO 2002/088075; US 2004/0116299 A1 is relied upon in this rejection as an English language equivalent).

*Scope of prior art*

Kodama et al. teach a method for the preparation of 2-halobenzoic acid derivatives via halogenation (including iodination) of the benzene ring in the ortho position using a Palladium catalyst (page 6 lines 1-21). The structure of the substrate and the product includes the compounds of the instant invention **when moiety A is a sulfoxide group** as defined on page 4, lines 4-20. The teaching of Kodama can be summarized as: sulfoxide --> halogenated sulfoxide.

*Ascertaining the difference between prior art and instant claims*

Kodama et al. differ from the instant invention in that Katsuhira et al do not teach oxidation of the sulfonyl group as is required by the second step of the instantly claimed process.

*Secondary reference*

Harayama et al. teach oxidation of phthalamide derivative (IV) to produce phthalamide derivative of formula (I) (Scheme on page 2, also paragraph [0014]). The compounds undergoing oxidation in Harayama et al. meet the core structural requirements of the oxidation substrates in the instant claims when  $n = 1$ . When  $n = 1$  in the compound of formula (IV), the compound comprises a sulfoxide group, oxidation of which produces compound (I) comprising a sulfone moiety. The oxidation step is therefore: halogenated sulfoxide --> halogenated sulfone.

*Obviousness*

Applicants invention is comprised of two steps; halogenation of a sulfoxide comprising amide followed by oxidation of the sulfoxide group to sulfone. Both of these

steps are known in the art as evidenced by Kodama et al. and Harayama et al. The compounds produced by the applicants invention are known in the art (instant specification Background art). In order to produce the already known compounds one of ordinary skill in the art would find it obvious to combine the teachings of Kodama et al. and Harayama et al. with expectation of success. The expectation of success is present because both references teach the above described reactions. Without unexpected results, combining two known processes is deemed obvious.

### ***Double Patenting***

Claims 1-4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 4 of U.S. Patent No. 7,057,067 ('067) in view of Harayama et al. (WO 2002/088075; US 2004/0116299 A1 is relied upon in this rejection as an English language equivalent).

### ***Scope of claims 1 and 4 of '067***

In claims 1 and 4 of '067 a process for halogenation of a benzoic acid derivative using palladium catalyst is claimed. In claim 4, further structural limitations include the compounds of the instant invention.

### ***Ascertaining the difference***

'067 does not claim oxidation step that follows halogenation.

### ***Secondary reference***

Harayama et al. teach oxidation of phthalamide derivative (VI) to produce phthalamide derivative of formula (I). The compounds undergoing oxidation in

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Harayama et al. meet the core structural requirements of the oxidation substrates in the instant claims when in compound (VI)  $n=1$ .

*Obviousness*

It is obvious to combine two processes in the same manner as the said processes are individually described in the art. One of ordinary skill in the art would find obvious to combine the halogenation step of '067 with oxidation step of Harayama et al. with an expectation of being successful at producing the compound of general formula (I) as defined by the instant claims.

***Reply to applicants' remarks and the Kodama declaration***

In the remarks, applicants have inadvertently referred to the Kodama reference as teaching the oxidation step and to the Harayama reference as teaching introduction of the halogen atom. In this reply the Examiner will treat the references as they are applied in the above rejection. i.e.:

Kodama: sulfoxide --> halogenated sulfoxide (halogenation)

Harayama: halogenated sulfoxide --> halogenated sulfone (oxidation)

A) Applicants have argued that while Kodama teaches halogenation of both, the sulfoxide and of the sulfide (page 7, last line), Harayama teaches oxidation of sulfide. The argument rests on a premise that Harayama fails to teach oxidation of sulfoxide.

Examiner disagrees with applicants' assertion that Harayama fails to teach oxidation of sulfoxide. In the scheme on page 2 of US2004/0116299 Harayama

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teaches oxidation of compound VI. Compound VI is a sulfoxide when  $n=1$ . Oxidation of a sulfoxide results in a sulfone.

B) Applicants remarks and the Kodama declaration point to unexpected results of using a sulfoxide in the halogenation process when compared to the results obtained with a sulfide. In the Remarks applicant also refers to the decreased catalyst loading as a benefit of the instant invention.

The increase in yield is not considered unexpected. The Komada reference teaches 92% yield for halogenation of a sulfoxide (page 9, paragraph [0047] of EP 1 277 726) where **2mg of palladium acetate catalyst is used with 4.8 g** of starting material. Instant example 4 uses **2.5mg of palladium acetate with 2.8g** of starting material and example 5 uses **8.7mg of palladium acetate with 7g** of starting material. Clearly the catalyst loading is smaller in the Komada reference and the yield obtained is above 90%. The results provided by the applicant are therefore not unexpected.

### ***Conclusion***

Claims 1-4 are pending

Claims 1-4 are rejected

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yevgeny Valenrod whose telephone number is 571-272-9049. The examiner can normally be reached on 8:30am-5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Sullivan can be reached on 571-272-0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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/Yevgeny Valenrod/

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